

specifying a photosensitive material layer thickness;

providing a layer of photosensitive material on the master substrate, the layer having an initial thickness corresponding to the specified photosensitive material layer thickness;

controlling optical exposure to the layer of photosensitive material; and

controlling development criteria of the layer of photosensitive material.

11. (Twice Amended) A method of making a data storage disk master comprising:  
providing a master substrate; and  
creating on the master substrate an inverse pattern of lands and grooves of a replica disk including substantially flat master groove bottoms that correspond to flat land tops of the replica disk by:

specifying a thickness of photosensitive material;

coating the master substrate with the specified thickness of photosensitive material;

exposing the photosensitive material to a controlled amount of optical energy; and

exposing the photosensitive material to developer solution.

12. (Cancelled)

13. (Cancelled)

14. (Twice Amended) The method of claim 11, wherein at least some of the inverse pattern of grooves have a depth greater than 50 nanometers.

15. (Twice Amended) The method of claim 11, wherein at least some of the inverse pattern of lands have a width greater than 150 nanometers.

19. (Twice Amended) A method of making a data storage disk master comprising:  
providing a master substrate; and

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creating on the master substrate an inverse pattern of surface variations of a replica disk including substantially flat master groove bottoms that correspond to flat tops of the surface variations of the replica disk by:

specifying a thickness of photosensitive material;  
coating the master substrate with the specified thickness of photosensitive material;  
exposing the photosensitive material to a controlled amount of optical energy; and  
exposing the photosensitive material to developer solution.

20. (Cancelled)

27. (Amended) A method of making a data storage disk master for use in a reverse mastering, data storage disk molding process, the data storage disk master including master lands and master grooves, wherein the data storage disk molding process produces replica disks having a surface relief pattern with replica lands and replica grooves, the surface relief pattern having an orientation which is the inverse of the data storage disk master, the method comprising the steps of:

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providing a master substrate; and  
creating a pattern on the master substrate that is an inverse of a desired replica disk pattern by:

covering the master substrate with a layer of photosensitive material;  
recording a surface relief pattern having master lands and master grooves in the data storage disk master, including the steps of exposing and developing the photosensitive material; and

controlling the exposing and developing of a specified thickness of photosensitive material to form master grooves extending down to a substrate interface between the master substrate and the layer of photosensitive material, such that the width of the master grooves at the substrate interface corresponds to a desired width of the replica lands, including the step of exposing the photosensitive material to obtain a wide flat master groove bottom defined by the master substrate, relative to a master land top.

28. (Amended) A method of making a disk master for use in making a replica disk in an inverse stamping process, the replica disk being capable of storing high volumes of information, the replica disk including a surface relief pattern with replica lands and replica grooves, the surface relief pattern having an orientation which is inverse of the disk master, the method comprising the steps of:

providing a master substrate; and

creating a pattern on the master substrate that is an inverse of a desired replica disk pattern by:

coating at least a portion of the master substrate with a layer of photosensitive material to form the disk master;

recording a surface relief pattern having master lands and master grooves in the master disk, including the steps of using a laser beam recorder for exposing the photosensitive material in a desired track pattern having a track pitch, and developing the photosensitive material; and

controlling the exposing and developing of the photosensitive material for forming master grooves extending down to a substrate interface between the master substrate and the photosensitive material, such that the width of the master grooves at the substrate interface corresponds to a desired width of the replica lands, including the step of exposing the photosensitive material to obtain a wide, flat master groove bottom having a width greater than 100 nanometers defined by the master substrate, relative to a master lands top.

29. (Amended) A method comprising:

creating a master disk for use in a process in which the master disk is used to create a first generation stamper, the first generation stamper is used to create a second generation stamper, and the second generation stamper is used to create replica disks; and

creating a pattern in the master disk to have an orientation that is inverse of a desired pattern for the replica disks by coating a master substrate with a photosensitive material and exposing and developing the photosensitive material down to a substrate interface to define flat master groove bottoms that correspond to flat tops of the desired pattern for the replica disks.

30. (Cancelled)

34. (Cancelled)

35. (Amended) A method comprising:

creating a master disk;

creating a pattern in the master disk to have an orientation that is inverse of a desired pattern for the replica disks by coating a master substrate with a photosensitive material and exposing and developing the photosensitive material down to a substrate interface to define flat master groove bottoms that correspond to flat tops of the desired pattern for the replica disks;

creating a first generation stamper using the master disk;

creating a second generation stamper using the first generation stamper; and

creating the replica disks using the second generation stamper, wherein the replica disks exhibit the desired pattern.